



**Texas State Soil and Water Conservation Board
 Clean Water Act §319(h) Nonpoint Source Grant Program
 FY 2018 Workplan 18-06**

SUMMARY PAGE	
Title of Project	Continued Statewide Delivery of Riparian and Ecosystem Education Program
Project Goals	<ul style="list-style-type: none"> Facilitate the promotion of healthy watersheds and improve water quality through the delivery of riparian and stream ecosystem education programs with a focus on priority watersheds. Increase citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs to protect them and minimize NPS pollution. Connect landowners with local technical and financial resources to improve management and promote healthy watershed and riparian areas on their land.
Project Tasks	(1) Project Administration; (2) Coordinate and Deliver Riparian Education Programs; (3) TFS Participation in Riparian Team and Program Delivery; (4) Evaluate the Effectiveness of the Riparian Education Trainings
Measures of Success	<ul style="list-style-type: none"> Deliver a minimum of 24 riparian education programs in prioritized watersheds. Coordinate 2 statewide riparian conferences Increased knowledge and understanding of riparian function and implementation of BMPs by individuals participating in the program, as measured by pre-/post-tests and post follow-up evaluation
Project Type	Implementation (X); Education (X); Planning (); Assessment (); Groundwater ()

Status of Waterbody on 2014 Texas Integrated Report	<u>Segment ID</u>	<u>Parameter of Impairment or Concern</u>	<u>Category</u>
	0508	Bacteria; Depressed DO	4a, 4a
	0511	Bacteria; Depressed DO, pH	4a, 4a, 4a
	0612	Bacteria	5b
	0805	Bacteria, dioxin & PCBs in edible tissue	4a, 5a
	0821C & D	Bacteria	5c
	0822A & B	Bacteria	4a
	0841	Bacteria, dioxin & PCBs in edible tissue	4a, 5a
	0841B – V	Bacteria	4a, 5b, 5c
	0901	Bacteria, dioxin & PCBs in edible tissue	5c, 5a
	1103	Bacteria, depressed DO, dioxin & PCBs in edible tissue	5a & 4a, 5b, 5a
	1105, A-E	Bacteria, depressed DO	5c
	1202K	Bacteria	5c
	1209, C, D, H-L	Bacteria	5c, 4a, 5b
	1217D	depressed DO	5c
	1221	Bacteria, depressed DO	5c, 5b
	1301	Bacteria	5c
	1302, A, B	Bacteria, depressed DO	5c, 5b
	1403J – K	Bacteria	5a
	1416A	depressed DO	5c
	1428B, C	Bacteria	5a, 4a
	1429C	Bacteria, impaired macrobenthics	5a, 5c
	1501	Bacteria, depressed DO	5c, 5b
	1602, B	Bacteria	5c
	1804A, C	Bacteria	5c
	1806	Bacteria	5c
	1810	Bacteria	4b
	1901	Bacteria, impaired fish community	4a, 5c
	1908	Bacteria, chloride	5c, 5c
	1911	Bacteria, impaired fish community	4a, 5c
	2001	Bacteria	5a
	2003	Bacteria	5a
	2422B, D	Bacteria, depressed DO, dioxin & PCBs in edible tissue	5c, 5b, 5a

Project Location (Statewide or Watershed and County)	Statewide					
Key Project Activities	Hire Staff (X); Surface Water Quality Monitoring (); Technical Assistance (); Education (X); Implementation (X); BMP Effectiveness Monitoring (); Demonstration (); Planning (); Modeling (); Bacterial Source Tracking (); Other ()					
<i>2012 Texas NPS Management Program Reference</i>	<ul style="list-style-type: none"> • Element One – LTGs 1, 2, 4 • Element One – STGs 3A, 3B, 3F • Elements Two & Three 					
Project Costs	Federal	\$315,757	Non-Federal	\$210,504	Total	\$526,261
Project Management	<ul style="list-style-type: none"> • Texas A&M AgriLife Research, Texas Water Resources Institute 					
Project Period	October 1, 2018 – September 30, 2022					

Part I – Applicant Information

Applicant							
Project Lead	Dr. Lucas Gregory						
Title	Assistant Director						
Organization	Texas A&M AgriLife Research, Texas Water Resources Institute						
E-mail Address	LFGregory@ag.tamu.edu						
Street Address	578 John Kimbrough Blvd., Suite 145						
City	College Station	County	Brazos	State	TX	Zip Code	77843-2260
Telephone Number	979-845-1851			Fax Number	979-845-0662		

Co-Applicant							
Project Lead	Hughes Simpson						
Title	Program Coordinator II						
Organization	Texas A&M Forest Service						
E-mail Address	hsimpson@tfs.tamu.edu						
Street Address	200 Technology Way, Suite 1281						
City	College Station	County	Brazos	State	TX	Zip Code	77845-3424
Telephone Number	979-458-6685			Fax Number			

Project Partners	
Names	Roles & Responsibilities
Texas State Soil and Water Conservation Board (TSSWCB)	Provide state oversight and management of all project activities and ensure coordination of activities with related projects and TCEQ.
Texas A&M AgriLife Research, Texas Water Resources Institute (TWRI)	Provide overall program management including project coordination, submission of quarterly and final reports, marketing, registrations, delivery of riparian education programs, website development and management, and evaluation of program effectiveness.
Texas A&M Forest Service (TFS)	Riparian Team Member: Assist with program development, marketing, and delivery; assist with information on quarterly and final reports.
Texas A&M AgriLife Research and AgriLife Extension	Riparian Team Members: Assist with program development, marketing & delivery.
Texas Parks and Wildlife Department (TPWD)	Riparian Team Member: Assist with program development, marketing & delivery.
USDA-Natural Resource Conservation Service (NRCS)	Riparian Team Member: Assist with program development, marketing, and delivery.
Texas Riparian Association (TRA)	Host Website; Riparian Team Member: Assist with program development, marketing, and delivery.
Texas Tech University Llano River Field Station (TTU-LRFS)	Riparian Team Member: Assist with program development, marketing, and delivery.
Auburn University	Riparian Team Member: Assist with overall project coordination, conference development, website management.
Independent Contractor Subaward: Nikki Dictson	Riparian Team Member: Assist with overall project coordination, conference development, website management.

Part II – Project Information

Project Type								
Surface Water	X	Groundwater						
Does the project implement recommendations made in (a) a completed WPP, (b) an adopted TMDL, (c) an approved I-Plan, (d) a Comprehensive Conservation and Management Plan developed under CWA §320, (e) the <i>Texas Coastal NPS Pollution Control Program</i> , or (f) the <i>Texas Groundwater Protection Strategy</i> ?				<table border="1"> <tr> <td>Yes</td> <td>X</td> <td>No</td> <td></td> </tr> </table>	Yes	X	No	
Yes	X	No						
If yes, identify the document.	Adams & Cow Bayou TMDLs & I Plan; Attoyac Bayou WPP; Austin Area TMDLs & I Plan; Bastrop Bayou WPP; Brady Creek WPP; Buck Creek WPP; Cedar Bayou WPP; Cypress Creek WPP; Dickinson Bayou TMDLs; Double Bayou WPP; Geronimo and Alligator Creeks WPP; Gilleland Creek TMDL & I-Plan; Greater Trinity River Region TMDLs; Guadalupe River Above Canyon Lake TMDL & I Plan; Hickory Creek WPP; Lake Granbury WPP; Lake Lavon WPP; Lampasas River WPP; Lavaca River WPP; Leon River WPP; Lower Nueces River WPP; Lower San Antonio River TMDL; Mill Creek WPP; Mission & Aransas River TMDL & I Plan; Navasota River WPP; Plum Creek WPP; San Bernard River WPP; Tres Palacios Creek TMDL & I Plan; Upper Cibolo Creek WPP; Upper Llano River WPP; Upper San Antonio River WPP							

If yes, identify the agency/group that developed and/or approved the document.		Year Developed	
	Adams and Cow Bayou – stakeholders, Parsons, TWRI		2007, 2015
	Attoyac Bayou – Attoyac Bayou Watershed Partnership, TWRI		2014
	Austin Area – Improving Austin Streams Coordination Committee		2015
	Bastrop Bayou – stakeholders, Houston-Galveston Area Council (HGAC)		2016
	Brady Creek – Brady Creek WPP Steering Committee, Upper Colorado River Authority		2016
	Buck Creek - Buck Creek Watershed Partnership, TWRI		2012
	Cedar Bayou – Cedar Bayou Watershed Partnership, HGAC		2016
	Cypress Creek – Cypress Creek Watershed Partnership, Meadow Center for Water and Environment		2015
	Dickinson Bayou – stakeholders, Texas Institute for Applied Environmental Research (TIAER)		2012, 2014
	Double Bayou – Double Bayou Watershed Partnership, Houston Advanced Research Center		2016
	Geronimo & Alligator Creeks – Geronimo and Alligator Creek Watershed Partnership, Texas A&M AgriLife Extension		2012
	Gilleland Creek – stakeholders, Lower Colorado River Authority		2007, 2011
	Greater Trinity River Region – stakeholders, TIAER		2011-2016
	Guadalupe River above Canyon Lake – stakeholders, TIAER, Upper Guadalupe River Authority		2007, 2011
	Hickory Creek – City of Denton, CH2MHill, Texas A&M, University of North Texas		2008
	Lake Granbury – Lake Granbury Stakeholders Committee, Brazos River Authority (BRA), Espey Consultants		2010
	Lake Lavon – Lake Lavon Watershed Partnership, North Texas Municipal Water District, Texas A&M AgriLife Extension		2017
	Lampasas River – Lampasas River Watershed Partnership, Texas A&M AgriLife Research		2013
	Lavaca River – Lavaca River stakeholders, TWRI		2018
	Leon River – Leon River stakeholders, Parsons, BRA		2015
	Lower Nueces River – Nueces River Watershed Partnership, Nueces River Authority		2016
	Lower San Antonio River – stakeholders, San Antonio River Authority (SARA), James Miertschin & Assoc.		2008
	Mill Creek – Mill Creek Watershed Partnership, Texas A&M AgriLife Extension		2015
	Mission and Aransas Rivers – stakeholders, TWRI		2016
	Navasota River – Navasota River Watershed Partnership, TWRI		2017
	Plum Creek – Plum Creek Watershed Partnership, Texas A&M AgriLife Extension		2008, 2014
	San Bernard River – stakeholders, HGAC		2017
	Tres Palacios Creek – stakeholders, TIAER, TWRI		2017, 2018
	Upper Cibolo Creek – Upper Cibolo Creek Watershed Partnership, City of Boerne, Parsons		2013
	Upper Llano River – Upper Llano River Watershed Partnership, TWRI		2016
	Upper San Antonio River – Bexar Regional Watershed Partnership, SARA, James Miertschin & Assoc., Parsons		2006

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2014 IR	Size (Acres)
Adams and Cow Bayou	120100051001 – ...1005	0508, A-C 0511, A-C, E	4a	156,160
Attoyac Bayou	120200050501, ...0401 – 0406, ...0301 – 0307	0612	5b	354,629
Austin Area Watersheds	parts of 120902050305 & ...0306, all of ...0307	1403J,K 1428B 1429C	5a, 5a 5a 5a	40,618
Bastrop Bayou	120402050300 & ...0400	1105	5c	263,168
Brady Creek	120901100101 – ...0108, ...0201 – ...0210	1416A	5c	513,948
Buck Creek	111201050401 - ...0406	0207A	NA	187,270
Cedar Bayou	120402030101 - ...0106	0901, 0902	5c, NA	135,517
Cypress Creek	121002030202	1815	NA	24,299
Dickinson Bayou	part of 120402040200	1103	4a, 5a, 5b	63,287
Double Bayou	120402020100	2422B 2422D	5a, 5b, 5c 5a, 5c	60,723
Geronimo Creek (including its tributary, Alligator Creek)	121002020110 & ...0111	1804A, C	5c, NA	44,152
Gilleland Creek	120903010106 & ...0107	1428C	NA	52,866
Greater Trinity River Region	120301010606-..0610; 120301020101-..0105; ..0201-..0208; ..0301- ..0307; ..0401-..0405; ..0501-..0506; ..0601- ..0607; ..0701-..0706; 120301050101-..0108; ..0201-..0205; ..0301- ..0306; 0401-..0410; ..0501-..054; 120301060401-..0409; ..0501-..0507	0805, 0806D, 0822A, 0822B, 0841, B, C, E-H, K-N, R, T, U, V	4a, 5a, 5b, 5c, NA	1,917,748
Guadalupe River above Canyon Lake	120402030101 -...0106 121002010101 -...0111; ...0201 -...0210; ...0301 - ...0308; ...0401 -...0405	1806	5a	979,113
Hickory Creek – Tributary to Lewisville Lake	120301030801-..0805	N/A	NA	114,272
Lake Granbury	120602010601 –0608, ..0701 – 0706, ..0801 – ...0809, ..0901 –...0907, 120602011001 – ...004, ..1101 – ...1110, ..1201 – ...1208	1205, A-H, 1206, A-D, 1230A	NA	1,312,846
Lake Lavon	120301060101 – ...0105; ..0201-..0208; ..0301- ..0307	0821, A-D	5c	492,095

Lampasas River (Lampasas River above Stillhouse Hollow Lake, Rocky Creek, Sulphur Creek, Simms Creek)	120702030101 – ..0106; ..0201-..0205; ..0301-..0309; ..0501-..0510	1216A, B;; 1217, A-F	NA	839,800
Lavaca River	121001010101 – ...0108, ...0201 – 0206, ...0301 – 0305, ...0401 – 0404	1601, 1602, A& B	5c 5c	582,361
Leon River	120702010501 – ...0509, ...0601 – 0605, ...0701 – 0705, ...0801 – 0806, ...0901 – 0908, ...1002	1221	5b, 5c	871,488
Lower San Antonio River	121003030202, ...0205, ...0206, ...0403, ...0404, ...0501, ...0503, ...0505, ...0604 –0608, 121003040405	1901	4a, 5c	776,863
Lower Nueces River	121102010001 – ...0005	2101	NA	111,069
Mill Creek	120701040201 – ...0210	1202K	5C	271,173
Mission and Aransas Rivers	121004060101 – ...0109, ...0201 – 0209, ...0301 – 0307	2001	5a	788,720
Navasota River	120701030201-204; 0307, 0309; 0401-0407; 0501-0510; 0601-0604; 0701-0707; 0801-0804	1209, C-D, H-L	5c 4a 5b	1,002,056
Plum Creek	121002030401 – ...0410	1810	4B	288,240
San Bernard River	120904010101-..0109; ..0201-07; ..0301-..0307	1301 1302, A, B	5a 5c	581,353
Tres Palacios Creek	121004010300	1501, 1502	5b, 5c	234,757
Upper Cibolo Creek	121003040101 & 0102	1908	5c	64,506
Upper Llano	120902020101 – ...0109; ...0201 – 0208; ..0301-..0306; 120902030101-..0108; ..0201-..0206; ..0301-..0305; ..0401-..0405	1415	NA	1,209,850
Upper San Antonio River	121003010201 – ...0203	1911	4a	88,064

Water Quality Impairment

Describe all known causes (i.e., pollutants of concern) and sources (e.g., agricultural, silvicultural) of water quality impairments or concerns from any of the following sources: *2014 Texas Integrated Report*, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

Statewide, contamination that leads to water quality impairments or concerns are caused by a variety of sources. Named sources in the *2014 Texas Integrated Report* for bacteria and depressed DO include:

Bacteria

PS - Industrial Point Source Discharge; NPS - Municipal (Urbanized High Density Area) Runoff; PS - Municipal Point Source Discharges; NPS - Residential Districts; NPS – Rural Residential Areas; NPS - Non-Point Source; NPS - Upstream Source; NPS - Urban Runoff/Storm Sewers; NPS – Septage Disposal; NPS - On-site Treatments Systems; PS – Package Plants; NPS – Animal Feeding Operations; NPS – Highways, Roads, Bridges, Infrastructure (New

Construction); NPS – Land Application of Wastewater Biosolids (non-agricultural); NPS – Agriculture; NPS – Irrigated Crop Production; UNK - Unknown;

Dissolved Oxygen

NPS - Channelization; NPS - Flow Alterations from Water Diversions; PS - Industrial Point Source Discharge; NPS - Municipal (Urbanized High Density Area) Runoff; PS - Municipal Point Source Discharges; NPS - Residential Districts; NPS - Non-Point Source; UNK - Unknown; NPS - On-site Treatments Systems; PS – Package Plants; NPS – Natural Sources; NPS – Agriculture; NPS – Irrigated Crop Production; PS – Drought-related Impacts

Project Narrative

Problem/Need Statement

Riparian degradation is a major threat to water quality, in-stream habitat, terrestrial wildlife, aquatic species, and overall stream health. Conversely, proper management, protection, and restoration of riparian areas decrease bacteria, nutrient, and sediment loadings to water bodies; lower in-stream temperatures; improve dissolved oxygen levels; improve aquatic habitat; and ultimately improves macrobenthos and fish community integrity. In Texas, the water quality assessment indicates NPS pollution contributes to approximately 45 percent of the water quality impairments to rivers and streams and 48 percent of the water quality impairments to lakes in Texas. The continuation of the *Texas Riparian and Stream Ecosystem Education* program TSSWCB #12-07 and TSSWCB #15-04 would continue outreach across Texas through online methods, landowner workshops, conferences, and professional trainings.

To improve the management of these sensitive and vital ecosystems, riparian education programs are needed regarding the nature and function of riparian zones, their benefits, and BMPs for protecting them. This will not only reduce NPS pollution, it will provide tremendous ecosystem service benefits and direct economic benefits to the community.

The State of Texas has more than 192,000 miles of rivers and streams that, along with closely associated floodplain and upland areas, comprise corridors of great economic, social, cultural, and environmental value. These riparian corridors are complex ecosystems that include the land, plants, animals, and network of streams within them. They perform a number of ecological functions such as modulating stream flow, storing water, removing harmful materials from water, and providing habitat for aquatic and terrestrial plants and animals. Simply put, the health of riparian systems is paramount to stream health. Proper management of riparian areas will protect banks and reduce erosion rates of stream banks and sediment into the streams and reservoirs. Riparian vegetation functions to slow down the overland flow, capture sediment, nutrients, other pollutants and organic matter as well as allowing for increased infiltration in the flood plain/riparian area. Higher levels of runoff increase the chances for pesticides, fertilizers, and fecal matter to reach streams and worsen water quality (TWDB, 2013). When management activities leave very little or no vegetation, resulting in stream banks being more susceptible to incision and/or widening of the stream (Figure 4; Zygo, 1997). As a stream incises, it may become disconnected and flood the riparian area less frequently or not at all, greatly affecting the ability for water to infiltrate and deposit sediment and nutrients. This results in a loss of forage production, wildlife habitat, and recreational value. In-stream habitat for fish and other aquatic species is also lost as these creeks deepen and widen. In addition, landowners may suffer as more and more land erodes and falls into the stream, ultimately causing acreage loss and affecting their property value and future economic opportunities.

Poor management leads to high sediment loads carried by streams that reduce water storage capacity in reservoirs where the sediment is deposited. Studies have shown that poorly managed stream banks can account for as much as 85% of the sediment contributed in a watershed (Figure 5; Wynn and Mostaghimi, 2006). The Texas Water Development Board (2009) calculated that the Richland-Chambers Reservoir in Navarro County loses 2,065 acre-feet of water capacity every year for a total loss of 43,361 acre-feet in the 20-year period since 1987, when it was impounded. Consequently, enough sediment has accumulated during that 20-year period to cover the bottom of the

43,384-acre reservoir to a depth of one foot (Figure 6). Texas A&M University researchers estimate that 84% of the sediment reaching the reservoir every year is from channel and stream bank erosion (Wang et al. 2010). In Texas as a whole, it is estimated that major reservoirs lose 90,000 acre-feet of water storage capacity every year due to sedimentation, which is roughly equal to the amount of water that 180,000 families use in one year (TWDB, 2007). At this rate, the Texas Water Development Board estimates that by 2060, approximately 4.5 million acre-feet of reservoir capacity will be lost due to sedimentation, which is more than the capacity that would be gained through the construction of new major reservoirs (TWDB, 2007). This agency reported that dredging costs twice as much or more than constructing a new reservoir, making it impractical in many cases (TWDB, 2005). Therefore, focusing management efforts on quality land management to stabilize stream banks and riparian areas may be one of the most cost effective strategies for extending the operational life of the state's water supply reservoirs.

Streams and riparian zones reflect the sum of impacts of natural and man-induced disturbances of drainage areas or watersheds. Management of the land, streams, and riparian zones affects not only individual landowners, but also livestock, wildlife, aquatic life and ecosystem services for everyone downstream. By understanding the processes, key indicators and impacts of disturbances, activities that hinder recovery, landowners and other citizen-stakeholders can evaluate these systems and improve their management to produce desired conditions.

Changes within a surrounding ecosystem (e.g., watershed) will impact the physical, chemical, and biological processes occurring within a stream corridor. Stream systems normally function within natural ranges of flow, sediment movement, temperature, and other variables, in "dynamic equilibrium." Over the years, human activities have contributed to changes in the dynamic equilibrium of stream systems. These activities have manipulated stream corridor systems for a wide variety of purposes, including domestic and industrial water supplies, irrigation, transportation, hydropower, waste disposal, mining, flood control, timber management, recreation, aesthetics, and fish and wildlife habitat. Increases in human population along with industrial, commercial, and residential development place heavy demands on stream corridors. The cumulative effects of these activities result in significant direct and indirect changes, not only to stream corridors, but also to the ecosystems or watersheds they are located in. The direct changes include degradation of water quality, decreased water storage and conveyance capacity, loss of habitat for fish and wildlife, and decreased recreational and aesthetic values. While the indirect changes are harder to quantify such as air quality, decomposition of wastes, and other ecosystem services we all take for granted, there is direct economic benefits that can be calculated. Many cities, such as Austin, have found that improving creek and floodplain protection is needed to prevent unsustainable public expense to maintain drainage infrastructure.

Benefits of healthy riparian/stream systems:

- High quality habitat for both aquatic and riparian species
- Dissipation of flood energy and reduced downstream flood intensity and frequency
- Higher, longer-lasting and less variable baseflow between storm events
- Deposition of sediment in the floodplain, stabilizing it and maintaining downstream reservoir capacity longer
- Debris and nutrient use and filtering in the floodplain to improve water quality and dissolved oxygen levels in the aquatic system
- Riparian vegetation canopies to shade streams and reduce their temperatures, providing a food base for aquatic and riparian fauna
- Fewer invasions of exotic undesirable riparian species
- Higher biodiversity than terrestrial uplands
- "Stabilized" banks, which reduce erosion and protect ownership boundaries
- Increased economic value through wildlife, livestock, timber, and recreational enterprises
- Improved rural land aesthetics and real estate values

The continuation of the *Texas Riparian and Stream Ecosystem Education* program TSSWCB #12-07 and #15-04 would continue outreach across Texas through online methods, landowner workshops, conferences, and professional trainings. This program has held workshops across the state in impaired watersheds. Over 40 workshops across the state have had

a range of 30-100 attendees for over 1,746 attendees impacting over 724,204 acres of managed land. Feedback from these workshops has been very positive. Further, TPWD has initiated a statewide riparian education effort targeting areas where there are additional habitat programs. This program will continue to coordinate closely with TPWD on both delivery and content to ensure landowners throughout the state are provided a consistent message of riparian enhancement and protection. TWRI and Dr. Fouad Jaber of the Texas A&M Research and Extension Center in Dallas have received 319 funding from TCEQ to conduct Urban Riparian & Stream Restoration workshops and he is on the Riparian Team.

TWRI has coordinated a Riparian Team with agencies and experts across the state that are working on riparian issues and or conducting trainings so that there is some coordination to reach more across the large state of Texas.

Further, there was a lack in a unifying and overarching linkage to the myriad of educational workshops and conferences focused on riparian education. There was a critical need to create synergy between the framework established by these programs and efforts in Texas and the Riparian Planning Team with members of many agencies and universities has created a team. This initial project has created this synergy and built off of these successful local programs to establish the State's mechanism to deliver riparian education in high priority watersheds. The Riparian Team has linked agencies and universities across the state in partnership and a cohesive effort. This program will continue to implement a riparian education program to support and enhance riparian management and water quality protection efforts by all agencies and organizations actively engaged in watershed planning across Texas. This program will continue to benefit watershed efforts regardless of constituent targeted or whether the watershed is urban or rural. Further, by protecting these ecologically sensitive riparian areas, communities will be able to improve water quality while maintaining healthy ecosystems, providing wildlife habitat, opportunities for outdoor recreation and enhanced ecosystem services.

Project Narrative

General Project Description (Include Project Location Map)

TWRI will continue to coordinate the Riparian Team for this project that is composed of TFS, Texas A&M University Ecosystem Science and Management Department (ESSM), Texas Parks and Wildlife Department (TPWD), NRCS, TRA, NRA, TTU-LRFS, TSSWCB, Texas Commission on Environmental Quality (TCEQ), Upper Trinity Regional Water District (UTRWD), Tarrant Regional Water District (TRWD), AgriLife Research and Extension, Auburn University, Independent Contractor (IC) and others to assist with program development, marketing, and delivery. TWRI will continue conducting riparian trainings in targeted watersheds and providing access to the program through web-based outreach and tools. TWRI will organize instructor teams for each event, composed of members of the Riparian Team, contractors, and others as needed to deliver the Riparian Education Programs.

The riparian workshops will continue to partner with and have expert instructors from the Riparian team at each training program. The basic existing framework established the past trainings conducted from the initial project (TSSWCB #12-07 and #15-04) will be utilized and expanded upon where possible. The morning session will include registration and pre-test, followed by indoor classroom style presentations. During lunch additional presentations may be provided that relate to the issues and/or landscape for the area, and local watershed planning effort update. The afternoon training session will be outside at one or more stream locations, where participants can see in the field firsthand the vegetation and functions they learned about in the classroom setting. One group will perform the stream walk instruction and the other will have additional discussions/presentations about stream functions and dynamics, flooding, wild pigs, etc. Each group will then switch and conduct the other task.

The program will be adapted as needed to meet local needs. For example, the program will be adapted in coordination with the Riparian Team for urban areas as needed. TFS will continue to be integral for both adapting the program and delivering it in East Texas. Due to logging activities in this region and specific requirements placed on such operations, the program will be adapted in coordination with the TFS to meet the needs of landowners and issues these logging areas and ensure consistency with existing logger training programs. Further, TFS is the recognized expert in Texas with regards to bottomland hardwood forests and their vegetation and management. As these bottomland forests are vital to

riparian protection and improvements, the TFS expertise will be needed to ensure the program retains the needed expertise to appropriately manage these critical systems. TFS has also developed an urban riparian forestry presentation.

To help market the program and further expand the reach of the program, presentations of varying length (15/30/45/60 min.) will be updated as needed and delivered to audiences throughout the state through county Extension programs, watershed stakeholder meetings, Clean Rivers Program Basin Steering committees, and other venues. These presentations will be available for delivery by anyone on the Riparian Team. Additionally, key elements and messages will be incorporated into presentations delivered by the TFS Program Coordinator, TWRI, and others on the Riparian Team throughout the state to generate greater interest in riparian protection efforts and increasingly expand requests for the program and its resources. It is anticipated that this will continue to greatly increase program momentum and concurrently initiate implementation of riparian protection concepts by landowners, setting the stage for greater improvements in riparian habitat, stream stability, and water quality.

The program will coordinate with the TFS, NRCS, TRA, River Authorities, universities, local soil and water conservation districts (SWCDs), County Extension Agents (CEAs), and particularly the TPWD Riparian Programs and TWRI/AgriLife's Urban Riparian and Stream Restoration Program. TWRI will coordinate Riparian Team meetings/teleconferences for planning workshops approximately every 6 months.

Riparian Landowner Trainings. Riparian landowner trainings (daylong) will focus on the nature and function of riparian zones (fluvial geomorphology, hydrology, vegetation), the benefits and direct economic impacts from ecological services of healthy riparian zones, BMPs for enhancing and protecting riparian zones, and technical and financial resources and incentives available for implementing riparian BMPs and riparian protection measures. Riparian education programs will cover an introduction to riparian principles, watershed processes, basic hydrology, erosion/deposition principles, riparian vegetation, potential causes of degradation and possible resulting impairment(s), and available local resources including technical assistance and tools that can be employed to prevent and/or resolve degradation. Existing resources and guides will be used for these trainings; however, where possible, regional information and curriculum will be developed. The goal is for participants to better understand and relate to riparian and watershed processes, the benefits that healthy riparian areas provide, and the tools that can be employed to prevent and/or resolve degradation and improve water quality. As a part of the training, participants will be educated on the importance of riparian protection activities. A major goal of the program will be to foster implementation of riparian BMPs. Training will also emphasize the need for watershed planning that supports maintenance of a natural hydrograph. Restoration of riparian areas degraded by changes to the natural hydrologic regime must be conducted in concert with efforts to remedy those upstream disturbances. At the conclusion of the training, participants will receive a certificate of completion.

TWRI and the Riparian Team will work in coordination with state and local organizations to select and schedule locations for the riparian education programs. Priority will be given to agencies and organizations currently involved in WPP or TMDL processes and those planning future watershed efforts (Fig. 1). Subsequently, additional watersheds will be selected based on impairment status, environmental sensitivity, and/or other priority issues. Due to the size of many watersheds in the state and in an effort to enhance outreach, riparian education programs, in both urban and rural settings, may be offered multiple times and at different locations within prioritized watersheds. In coordination with project partners approximately eight workshops will be offered each year in the highest priority watersheds for 24 total.

Coordinate Two Statewide Riparian Conferences will be held to provide additional riparian information to those interested. These may be held in conjunction with the TRA, professional societies, River Authorities, etc. These conferences will springboard from the momentum by both the Riparian Symposiums and the SW Stream Restoration Conferences. The Urban Riparian Symposium is held every other year in Texas Cities while the SW Stream Restoration has been held annually in San Antonio with the Resource and multiple agencies, and NGOs.

Evaluation and Assessment. The trainings will include an evaluation component to assess program effectiveness and to modify and enhance curriculum content to achieve project goals. A two-stage evaluation approach will be used to measure both knowledge and behavior changes of individuals participating in the program.

Stage 1. A pre-/post-test evaluation strategy will be implemented at the beginning and end of both the face-to-face educational program and web-based training program. The pre-test will ask knowledge-based questions and post-test will measure the same knowledge-based questions to determine the knowledge increase of participants. In addition, the post-test will include 'satisfaction' questions and 'intentions to change or adopt' questions.

Stage 2. A post follow-up assessment instrument will also be sent to participants approximately 6 months post, via email to complete the assessment and ascertain what practices were actually adopted six months after participating in the program.

Results will be summarized in a project final report. Briefs also may be developed to document and enhance the success of future riparian education and similar training programs.

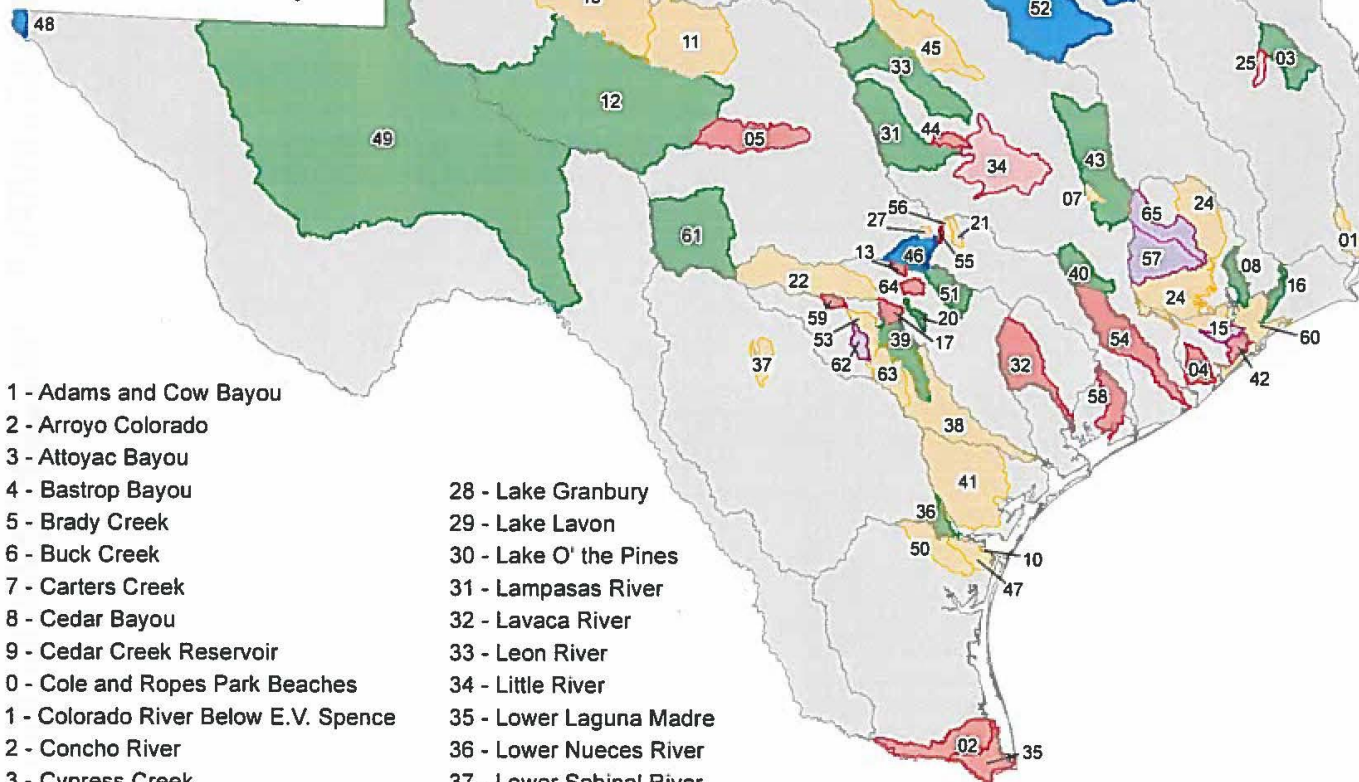
State of Texas Watershed-Based Planning June 2017

Type

- WPP(or WC) and TMDL*
- TCEQ WC
- TCEQ WPP
- TMDL*
- TSSWCB WPP
- Third-Party WPP

*Does not include TMDLs for pesticides, legacy pollutants, or metals.

WC = Watershed Characterization
 WPP = Watershed Protection Plan
 TMDL = Total Maximum Daily Load



- 1 - Adams and Cow Bayou
- 2 - Arroyo Colorado
- 3 - Attoyac Bayou
- 4 - Bastrop Bayou
- 5 - Brady Creek
- 6 - Buck Creek
- 7 - Carters Creek
- 8 - Cedar Bayou
- 9 - Cedar Creek Reservoir
- 0 - Cole and Ropes Park Beaches
- 1 - Colorado River Below E.V. Spence
- 2 - Concho River
- 3 - Cypress Creek
- 4 - Dallas - Fort Worth Area TMDLs
- 5 - Dickinson Bayou
- 6 - Double Bayou
- 7 - Dry Comal/Comal
- 8 - E.V. Spence Reservoir
- 9 - Eagle Mountain Reservoir
- 0 - Geronimo Creek
- 1 - Gilleland Creek
- 2 - Guadalupe River Above Canyon Lake
- 3 - Hickory Creek
- 4 - Houston Area TMDLs
- 5 - La Nana Bayou
- 6 - Lake Arlington and Village Creek
- 7 - Lake Austin

- 28 - Lake Granbury
- 29 - Lake Lavon
- 30 - Lake O' the Pines
- 31 - Lampasas River
- 32 - Lavaca River
- 33 - Leon River
- 34 - Little River
- 35 - Lower Laguna Madre
- 36 - Lower Nueces River
- 37 - Lower Sabinal River
- 38 - Lower San Antonio River
- 39 - Mid and Lower Cibolo
- 40 - Mill Creek
- 41 - Mission and Aransas
- 42 - Moses-Karankawa Bayous
- 43 - Navasota Below Lake Limestone
- 44 - Nolan Creek
- 45 - North Bosque River
- 46 - Onion & Barton Creeks
- 47 - Oso Bay and Oso Creek
- 48 - Paso del Norte
- 49 - Pecos River
- 50 - Petronila Creek
- 51 - Plum Creek
- 52 - Richland-Chambers
- 53 - Salado Creek
- 54 - San Bernard
- 55 - Shoal Creek
- 56 - Spicewood Springs and Walnut Creek
- 57 - Spring and Cypress Creek
- 58 - Tres Palacios
- 59 - Upper Cibolo Creek
- 60 - Upper Coast Oyster Waters
- 61 - Upper Llano River
- 62 - Upper San Antonio River
- 63 - Upper San Antonio River
- 64 - Upper San Marcos
- 65 - West Fork San Jacinto and Lake Creek

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	\$31,576	Non-Federal	\$21,050	Total	\$52,626
Objective	To effectively administer, coordinate and monitor all work performed under this project including technical and financial supervision and preparation of status reports.					
Subtask 1.1	TWRI will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 1 st of January, April, July and October. QPRs shall be distributed to all Project Partners.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.2	TWRI and SRS will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.3	TWRI will host coordination meetings or conference calls, at least quarterly, with Project Partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. TWRI will develop lists of action items needed following each project coordination meeting and distribute to project personnel.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.4	TWRI will develop a Final Report that summarizes activities completed and conclusions reached during the project. The report will also include the extent to which project goals and measures of success have been achieved.					
	Start Date	Month 1		Completion Date	Month 48	
Deliverables	<ul style="list-style-type: none">QPRs in electronic formatReimbursement Forms and necessary documentation in hard copy formatFinal Report in electronic and hard copy formats					

Tasks, Objectives and Schedules						
Task 2	Coordinate and Deliver Riparian Education Programs					
Costs	Federal	\$219,451	Non-Federal	\$146,300	Total	\$365,751
Objective	Deliver riparian education programs to targeted watersheds to promote healthy riparian areas, thus healthy watersheds, by increasing citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs for protecting them and minimizing NPS pollution.					
Subtask 2.1	TWRI will continue to coordinate the existing Riparian Team to direct this synergistic project. The Riparian Team includes TWRI, TFS, TPWD, NRCS, TRA, NRA, ESSM, TTU-LRFS, AgriLife, TRWD, UTRWD, and others. The Riparian Team will continue to assist with program development, marketing, and delivery. This Riparian Team will serve as the primary pool of instructors to deliver the Riparian Education Program. The Riparian Team will meet as frequently as needed, likely quarterly in year 1 and semi-annually in years 2-3.					
	Start Date	Month 1		Completion Date	Month 48	

Subtask 2.2	TWRI will work in coordination with TSSWCB, TCEQ, TPWD, NRCS, TFS, and other state and local organizations to select locations for the riparian education training events. This project will deliver riparian education programs to targeted watersheds across the state. Priority watersheds will be selected in collaboration with TSSWCB, and with input from TCEQ and others, and primarily represent those with approved WPPs or TMDLs and those developing or planning development of WPPs or TMDLs. Other watersheds may be selected based on need and in response to collaborations with other groups and organizations, including river authorities, SWCDs, local citizen groups/watershed associations, etc. Watersheds will be selected consistent with the State's implementation of the Texas NPS Management Program. Additional watersheds will be selected based on impairment status, environmental sensitivity, and/or other priority issues. TWRI and TSSWCB will periodically make collaborative decisions to re-prioritize and add to/remove from the list of watersheds.		
	Start Date	Month 1	Completion Date
Subtask 2.3	The TWRI and Riparian Team will continue establishing CEU credits for the riparian education program to encourage participation by landowners and water resource professionals.		
	Start Date	Month 1	Completion Date
Subtask 2.4	TWRI, with assistance of the Riparian Team, will actively market riparian education trainings through news releases (AgriLife News and local media outlets), internet postings, listserv, Facebook, newsletter announcements, public/conference presentations, flyers, etc., to enhance awareness and utilization. TSSWCB must review and approve all project-related content in any materials prior to distribution.		
	Start Date	Month 3	Completion Date
Subtask 2.5	TWRI, with assistance of the Riparian Team, will deliver 24 riparian education training events in prioritized watersheds (Subtask 2.4) during the project period. Certificates of completion will be provided to all participants in the trainings.		
	Start Date	Month 6	Completion Date
Subtask 2.6	TWRI in collaboration with the Riparian Team will update a series of riparian education presentations of various lengths (15/30/45/60 min.) and provide them to a variety of audiences and venues statewide such as those listed in Subtask 1.4, but also including county and multi-county Extension programs, landowner workshops, SWCD programs, and other suitable venues. Further, key elements of the program will be incorporated into presentations delivered by TFS, TWRI, and others on the Riparian Team and delivered to a variety of audiences throughout the state.		
	Start Date	Month 3	Completion Date
Subtask 2.7	TWRI and select project partners will coordinate two statewide riparian conferences in coordination with the Texas Riparian Association, professional organizations, River Authorities, or other entities annual meetings.		
	Start Date	Month 6	Completion Date
Deliverables	<ul style="list-style-type: none"> Summaries of Riparian Team meetings and action items Standardized presentations of various lengths CEU credits for Program Periodically updated list of specific watersheds where riparian education trainings have been and will be implemented Schedules, agendas, and attendance lists for riparian education trainings, Agency trainings, and statewide conferences Collection of press releases, newspaper articles, newsletters, public information statements, etc., as developed and disseminated 24 Riparian Education Training Events Two Statewide Riparian Conferences 		

Tasks, Objectives and Schedules						
Task 3	TFS Participation in Riparian Team and Program Delivery					
Costs	Federal	\$48,942	Non-Federal	\$32,628	Total	\$81,570
Objective	Participate on Riparian Team and assist with planning program development, marketing, and delivery of riparian landowner programs, annual conferences, and other trainings as appropriate.					
Subtask 3.1	TFS will participate on Riparian Team by attending meetings/conference calls and reviewing program materials.					
	Start Date		Month 1	Completion Date		Month 48
Subtask 3.2	TFS will assist with development, marketing, and delivery of riparian landowner programs, annual conferences, and other trainings.					
	Start Date		Month 1	Completion Date		Month 48
Subtask 3.3	TFS will assist by providing information for quarterly progress reports, annual reports, and final reports.					
	Start Date		Month 1	Completion Date		Month 48
Deliverables	<ul style="list-style-type: none">TFS will participate on Riparian Team.TFS will be participation as an instructor as appropriate and assist with marketing trainingsTFS will assist with reporting.					

Tasks, Objectives and Schedules						
Task 4	Evaluate the Effectiveness of the Riparian Education Trainings					
Costs	Federal	\$15,788	Non-Federal	\$10,526	Total	\$26,314
Objective	To measure both knowledge and behavior changes of individuals participating in the program.					
Subtask 4.1	TWRI will conduct pre- and post-training evaluations to assess increased knowledge of participants on the nature and function of riparian zones, their benefits, and BMPs for protecting them and minimize NPS pollution; to evaluate participant satisfaction with the program; and to evaluate participant’s intentions to change their behavior as a result of the program. Additionally, TWRI will deliver a follow-up assessment via email post follow-up to ascertain behavior changes actually adopted by participants.					
	Start Date		Month 1		Completion Date	
Subtask 4.2	TWRI will analyze results obtained from the pre-/post-tests and post 6-month follow-up assessment using descriptive, correlational, and analysis of variances statistical procedures. Results will be used to periodically evaluate and modify riparian education program materials and incorporated into the final report.					
	Start Date		Month 1		Completion Date	
Deliverables	<ul style="list-style-type: none">• Pre-/post-test evaluations for the watershed education programs• Six-month follow-up assessments for the watershed• Results from the evaluations					

Project Goals (Expand from Summary Page)

- Facilitate the promotion of healthy watersheds and improve water quality through the delivery of riparian and stream ecosystem education programs with a focus on priority watersheds via group trainings.
- To increase citizen awareness, understanding, and knowledge about the nature and function of riparian zones, their benefits, and BMPs to protect them and minimize NPS pollution.
- To connect landowners with local technical and financial resources to improve management and promote healthy watershed and riparian areas on their land.

Measures of Success (Expand from Summary Page)

- Deliver a minimum of 24 riparian education programs in prioritized watersheds
- Coordinate 2 statewide riparian conferences
- Increased knowledge and understanding of riparian function and implementation of BMPs by individuals participating in the program, as measured by pre-/post-tests and 6-month follow-up assessment

2012 Texas NPS Management Program Reference (Expand from Summary Page)

Components, Goals, and Objectives

Element 1 – Explicit short- and long-term goals, objectives and strategies that protect surface...water

LTG: To protect and restore water quality from NPS pollution through assessment, implementation and education

1. Focus NPS abatement efforts ...and available resources in watersheds identified as impacted by NPS pollution.
2. Support the implementation of state, regional, and local programs to prevent NPS pollution through assessment ...and education.
4. Increase overall public awareness of NPS issues and prevention activities.

STG Three – Education: Conduct education and technology transfer activities to help increase awareness of NPS pollution and prevention activities contributing to the degradation of waterbodies... by NPS.

- Objective A – Enhance existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education.
- Objective B – Administer programs to educate citizens about water quality and their potential role in causing NPS pollution.
- Objective F – Implement public outreach and education to maintain and restore water quality in water bodies impacted by NPS pollution.

Element 2 – Working partnerships...to appropriate, state,...regional, and local entities, private sector groups, and federal agencies.

Element 3 – Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds

Estimated Load Reductions Expected (Only applicable to Implementation Project Type)

N/A

EPA State Categorical Program Grants – Workplan Essential Elements FY 2018-2022 EPA Strategic Plan Reference
Strategic Plan Goal – Goal 1 Core Mission
Strategic Plan Objective – Objective 1.2 Provide for Clean and Safe Water

Part III – Financial Information

Budget Summary			
Federal	\$	315,757	% of total project 60%
Non-Federal	\$	210,504	% of total project 40%
Total	\$	526,261	Total 100%
Category	Federal		Non-Federal
Personnel	\$	127,930	\$ 44,504
Fringe Benefits	\$	35,449	\$ 9,303
Travel	\$	11,324	\$ 0
Equipment	\$	0	\$ 0
Supplies	\$	1,200	\$ 0
Contractual	\$	58,848	\$ 48,701
Construction	\$	0	\$ 0
Other	\$	39,820	\$ 0
Total Direct Costs	\$	274,571	\$ 102,508
Indirect Costs (≤ 15%)	\$	41,186	\$ 107,996
Total Project Costs	\$	315,757	\$ 210,504

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	\$ 127,930	<p>Research Associate: \$45,810 @ 14.4 months (\$56,638) Program Manager: \$76,778 @ 2.32 months (\$15,307) Program Specialist: \$40,000 @ 5.4 months (\$18,545) Graduate Student Labor: \$12 per hour, 20 hours per week for 156 weeks (\$37,440)</p> <p>*named positions are budgeted with a 3% annual pay increase in all years; TBD positions are budgeted with a 3% pay increase in years after year 1 *(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.) *cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount.</p>
Fringe Benefits	\$ 35,449	<p>Fringe for faculty and staff is calculated at 16.8% salary plus \$746 per month Fringe for students is calculated at 10% salary</p> <p>*(Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.) *cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount.</p>
Travel	\$ 11,324	<p>Travel to 21 trainings statewide throughout the 3-year project duration for 1-2 people including 2 days per diem and 1-day lodging at the GSA state rates; mileage @ \$0.50 per mile and Concur travel fees. Estimates are based on rates for Arlington/Ft Worth, Austin, Corpus Christi, Dallas, Houston, San Antonio, Junction, Weslaco and the standard rate for areas not known. (\$9,112)</p> <ul style="list-style-type: none"> - Per diem (\$2,731) - Lodging (\$2,925) - Mileage (\$3,288) - Concur fees (\$168) <p>Travel to 1 annual conference, end of project 3-day advanced training (\$673)</p> <ul style="list-style-type: none"> - One conference estimated at Dallas for one person, 3 days, 2 nights at \$64 per diem and \$146 lodging and 362 miles round-trip at \$0.50 per mile plus an \$8 Concur fee (\$673) <p>Miscellaneous travel for coordination / steering committee meetings, project-related meetings, etc. (\$1,539)</p> <ul style="list-style-type: none"> - Per diem estimated at \$64 per day for 6 days throughout the project duration (\$384) - Lodging estimated at \$135 per night for 3 nights throughout the project duration (\$405) - Mileage estimated at 3 trips, 500 miles round trip at \$0.50 per mile (\$750)
Equipment	\$ 0	N/A

Supplies	\$ 1,200	Materials for manuals, including, but not limited to: binders, paper, cartridges, name tags, etc.
Contractual*	\$ 58,848	Texas A&M Forest Service \$45,786 Auburn University \$1,140 Independent Contractor Subaward: Nikki Dictson \$11,922
Construction	\$ 0	N/A
Other	\$ 39,820	Communications Services (\$10,200) Printing costs for meeting materials, manuals, etc. (\$4,320) Facility rental for trainings (\$3,700) Instructor travel for 4 instructors * 2 conferences (\$4,000) Software license fees, including Creative Sweets, SPSS, GIS, Adobe Professional (\$1,800) Conferences fees for 3 people annually to Urban Riparian and Southwest Stream Restoration (\$4,500) Online Training user fee at \$3 per user for an estimated 1,200 users (\$3,600) Speaker Fees (\$7,700)
Indirect	\$ 41,186	15% total direct costs

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	\$ 44,504	<p>TWRI Director: \$205,400 @ 2.45 months (\$44,504)</p> <p>*named positions are budgeted with a 3% annual pay increase in all years; TBD positions are budgeted with a 3% pay increase in years after year 1</p> <p>*(Salary estimates are based on average monthly percent effort for the entire contract. Actual percent effort may vary more or less than estimated between months; but in the aggregate, will not exceed total effort estimates for the entire project.)</p> <p>*cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount.</p>
Fringe Benefits	\$ 9,303	<p>Fringe for faculty and staff is calculated at 16.8% salary plus \$746 per month</p> <p>*(Fringe benefits estimates are based on salary estimates listed. Actual fringe benefits will vary between months coinciding with percent effort variations; but in the aggregate, will not exceed the overall estimated total.)</p> <p>*cell phone allowances for project calls/emails during & after business hours & travel are occasionally factored into salaries & fringe, but again, will not exceed overall dollar amount.</p>
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 48,701	<p>Texas A&M Forest Service (TFS) \$45,861</p> <p>Auburn University \$244</p> <p>Independent Contractor Subaward: Nikki Dictson \$2,596</p>
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 107,996	<p>Texas A&M AgriLife Research's negotiated indirect cost rate is 48.5% modified total direct costs.</p> <p>IDC on cost share $\\$53,807 \text{ MTDC} * 0.485 = \\$26,096$</p> <p>Unrecovered IDC = 48.5% - 15% = 33.5% $\\$253,785 * 0.485 = \\$123,086 - \\$41,186 = \\$81,900$</p>

Budget Justification (Federal) – Texas A&M Forest Service		
Category	Total Amount	Justification
Personnel	\$ 26,276	TFS Water Resources Forester, \$51,522 annually, 17% time
Fringe Benefits	\$ 8,408	Fringe is calculated at 32% of salary
Travel	\$ 2,130	TFS Travel includes: - 5 events per year in various locations throughout the state including professional trainings and conferences. Estimated costs include per diem at the standard state rates for the areas (\$765) and hotel costs at the state rate for the areas (\$1,365) = \$2,130
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 3,000	Fuel, employee registration, exhibit at professional riparian conferences
Indirect	\$ 5,972	15% of Modified Total Direct Costs

Budget Justification (Non-Federal) – Texas A&M Forest Service		
Category	Total Amount	Justification
Personnel	\$ 24,080	TFS Program Leader III, \$80,268 annually, 10% time
Fringe Benefits	\$ 7,705	Fringe is calculated at 32% of salary
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 14,076	Texas A&M Forest Services' negotiated indirect cost rate is 28%. - 28% of non-federal modified total direct costs (\$8,900) - 13% of unrecovered indirect costs on federal funds (\$5,176)

Budget Justification (Federal) – Auburn University		
Category	Total Amount	Justification
Personnel	\$ 0	N/A
Fringe Benefits	\$ 0	N/A
Travel	\$ 991	Travel to Riparian Conferences in Dallas. Airfare (\$338), hotel @ \$142/night in Dallas for 4 nights (\$568) and per diem @ \$17/day for 5 days (\$85).
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 149	15% of Modified Total Direct Costs

Budget Justification (Non-Federal) – Auburn University		
Category	Total Amount	Justification
Personnel	\$ 0	N/A
Fringe Benefits	\$ 0	N/A
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 0	15% of Modified Total Direct Costs
Unrecovered IDC	\$ 244	24.6% of Federal Modified Total Direct Costs

Budget Justification (Federal) – Independent Contractor: Nikki Dictson		
Category	Total Amount	Justification
Personnel	\$ 9,657	Independent Contractor: \$85,000 @ 1.36 months
Fringe Benefits	\$ 0	N/A
Travel	\$ 1,181	Travel to 1 Riparian Conferences in San Antonio, airfare, mileage 210 miles @ 0.545: \$115, parking \$22, hotel @ \$145/night in San Antonio, and per diem @ \$45/day
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 1,084	10% of Modified Total Direct Costs

Budget Justification (Non-Federal) – Independent Contractor: Nikki Dictson		
Category	Total Amount	Justification
Personnel	\$ 2,360	Independent Contractor: \$85,000 @ 0.33 months
Fringe Benefits	\$ 0	N/A
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 236	10% of Modified Total Direct Costs